

Appendix L

Nitrate Sensitivity Analysis: Cumulative Effects Example

Nitrate from drainfield A will raise the background nitrate concentration in the ground water beneath drainfields B and C (see Example 1 on next page).

Each drainfield must meet the nitrate-nitrogen standard (5 mg/L or 7.5 mg/L) at the end of its mixing zone length (note that a ground water mixing zone may extend beyond the next downgradient drainfield).

1. Calculate the nitrate concentration at the end of the 100-foot mixing zone for drainfield A using the background ground-water nitrate sample concentration. The calculated nitrate concentration must meet the nitrate-nitrogen standard.
2. Calculate the background nitrate concentration for drainfield B using the distance from drainfield A to the end of the 100-foot mixing zone of drainfield C (example 1) as the mixing zone length in the nitrate sensitivity analysis; the actual mixing zone length for drainfield A does not change, it is just lengthened in the calculation to determine the background nitrate concentration for drainfield B (note that a value for precipitation should only be entered in the first calculation to determine the background concentration for drainfield B, a value of zero precipitation should be used in calculations of background concentration for subsequent drainfields). Then enter this value as the background nitrate concentration in the nitrate dilution model for drainfield B. The calculated nitrate concentration must meet the nitrate-nitrogen standard at the end of the 100-foot mixing zone for drainfield B. For example 2, the distance used to calculate the background nitrate for drainfield B would be the distance from drainfield A to the end of drainfield B's 100-foot mixing zone.
3. Calculate the background nitrate concentration for drainfield C by using the distance from drainfield B to the end of the 100-foot mixing zone of drainfield C as the mixing zone length in the nitrate sensitivity analysis. Then enter this value as the background nitrate concentration in the nitrate dilution model for drainfield C. The calculated nitrate concentration must meet the nitrate-nitrogen standard at the end of the 100-foot mixing zone for drainfield C.